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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHIN HIN OON, SOON KEAL TAN,
KEAN LOO KEH, and MARIAM SOLVAN

Appeal 2009-002989
Application 10/804,286
Technology Center 2800

Decided: August 10, 2009

Before CATHERINE Q. TIMM, JEFFREY T. SMITH, and
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1-11. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

I. STATEMENT OF THE CASE

The invention relates to a color filter having a primary filter layer and a trim filter, in which the trim filter preferentially attenuates light at a

wavelength between a first and second characteristic wavelength of the primary filter, and a method of fabricating such a filter (Spec. 3, ll. 6-15).

Claims 1 and 8 are illustrative of the subject matter on appeal:

1. A color filter comprising:

a primary filter layer that is partially transparent to light, said primary filter layer having a transmission function as a function of wavelength said transmission function varying as a function of the spatial location on said primary filter layer, said primary filter transmitting light in a first band of wavelengths about a first characteristic wavelength at a first location in said primary filter layer and transmitting light in a second band of wavelengths about a second characteristic wavelength at a second location in said primary filter layer; and

a first trim filter comprising a layer of material that overlies said first and second locations and that preferentially attenuates light at a first trim wavelength between said first and second characteristic wavelengths, said first trim filter having a transmission function as a function of wavelength that is substantially the same at said first and second locations, wherein said first trim filter transmission function is selected to selectively block light at edges of said first and second bands of wavelengths that is not blocked by said primary filter layer transmission function, whereby said primary filter layer and said first trim filter together have a target transmission function transmitting a desired set of wavelengths.

8. A method for fabricating a color filter, said method comprising:

bonding a first trim filter layer to a substrate;

bonding a primary filter layer that is partially transparent to light to said first trim filter layer, said primary filter layer having a transmission function as a function of wavelength, said transmission function varying as a function of the spatial location on said primary filter layer, said primary filter transmitting light in a first band of wavelengths about a first characteristic wavelength at a first location in said primary filter layer and transmitting light in a second band of wavelengths about a second characteristic wavelength at a second location in said primary filter layer;

wherein said first trim filter layer comprises a layer of material that overlaps said first and second locations and that preferentially attenuates light at a first trim wavelength between said first and second characteristic wavelengths, said first trim filter having a transmission function as a function of wavelength that is substantially the same at said first and second locations, and wherein said first trim filter transmission function is selected to selectively block light at edges of said first and second bands of wavelengths that is not blocked by said primary filter layer transmission function, whereby said primary filter layer and said first trim filter together have a target transmission function transmitting a desired set of wavelengths.

The Examiner relies on the following prior art reference to show unpatentability:

Suda et al. ("Suda") US 5,166,784 Nov. 24, 1992

The Examiner maintains the following rejections:

1. Claims 1, 2, and 4-6 rejected under 35 U.S.C. § 102(b) as anticipated by Suda; and

2. Claims 3 and 7-11 rejected under 35 U.S.C. § 103(a) as obvious over Suda.

II. FIRST REJECTION

For the first rejection, Appellants present arguments only with respect to claim 1 (Br. 6-11).

A. ISSUES ON APPEAL

The issues on appeal arising from the contentions of Appellants and the Examiner are: (a) have Appellants shown that the Examiner reversibly erred in interpreting the phrase "selectively block light at the edges of said first and second bands of wavelengths" or in finding that Suda's filter 7 provides this function with respect to the green and red wavelengths (curves 16' and 17', respectively) of Figure 10; or (b) have Appellants shown that the

Examiner reversibly erred in finding that Figures 10 and 12 of Suda show that Suda describes a "trim filter" within the meaning of claim 1?

B. FACTUAL FINDINGS

The following Findings of Fact (FF) are relevant to deciding the above identified issues on appeal:

1. Appellants' Specification does not use the term "edges" as recited in claim 1 (*see generally* Spec.). Appellants' Specification discloses only a single example of a trim filter. In that example, the filter trims both edges of three different wavelength bands. (*See e.g.*, Spec. 6, l. 21 to 7, l. 1; Figure 5.)

2. Appellants admit that Suda shows a minimum in the transmission curve of Suda's filter 7 (shown in Figure 12) that attenuates wavelengths along the falling edge of curve 16' and the rising edge of curve 17' of Figure 10 (Br. 7, ll. 23-27; Br. 10, ll. 24-27; Reply Br. 5, ll. 11-13).

3. Curve 16' in Suda's Figure 10 represents the transmission of light at a wavelength band about a green characteristic wavelength, and curve 17' in Figure 10 represents the transmission of light at a wavelength band about a red characteristic wavelength for a color separation filter (Suda, col. 2, ll. 29-31; col. 7, ll. 1-4; Figure 10).

C. PRINCIPLES OF LAW

During examination, "claims . . . are to be given their broadest reasonable interpretation consistent with the specification, and . . . claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) (*quoting In re Bond,* 910 F.2d 831, 833 (Fed. Cir. 1990)). "[T]he claims themselves provide substantial

guidance as to the meaning of particular claim terms." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005). "To begin with, the context in which a term is used in the asserted claim can be highly instructive." *Id.*

A claimed apparatus must be distinguished from the prior art apparatus on the basis of structure. Therefore, the patentability of an apparatus claim depends only on the claimed structure, not on the use or purpose of that structure, *Catalina Marketing Int'l., Inc. v. Coolsavings.com Inc.*, 289 F.3d 801, 809 (Fed. Cir. 2002), or the function or result of that structure. *See In re Schreiber,* 128 F.3d 1473, 1477 (Fed. Cir. 1997); *In re Gardiner,* 171 F.2d 313, 315-16 (CCPA 1948) ("It is trite to state that the patentability of apparatus claims must be shown in the structure claimed and not merely upon a use, function, or result thereof.").

Language in an apparatus claim directed to the function, operation, intent-of-use, and materials upon which these apparatus components work that does not structurally limit the apparatus components or patentably differentiate the claimed apparatus from an otherwise identical prior art apparatus will not support patentability. *See, e.g., In re Rishoi,* 197 F.2d 342, 344-45 (CCPA 1952); *In re Otto,* 312 F.2d 937, 940 (CCPA 1963); *In re Ludtke,* 441 F.2d 660, 663-64 (CCPA 1971); *In re Yanush,* 477 F.2d 958, 959 (CCPA 1973).

D. ANALYSIS

The Examiner has found that the transmissivity of Suda's filter 7 shown in Figure 12 attenuates light at the falling edge of curve 16' and the rising edge of curve 17' of Figure 10 (Ans. 3-4 and 12). Appellants argue that the Examiner erred in failing to consider the effect of filter 7 on all the edges of the wavelength bands shown in Figure 10 (Br. 7 and 10; Reply Br.

2-3). In particular, Appellants state that "filter 7 has an amplifying, not trimming, effect on the 500nm rising edge of curve 16'" (Br. 10), and Appellants argue that the Examiner ignores the effect of curve left/rising edge of curve 16' and the right/falling edge of curve 17' (Reply Br. 2-3). In other words, Appellants are suggesting that a filter must attenuate light at both the rising and falling edges of a wavelength band in order to fall within the scope of claim 1. Such would be the case if, for example, the word "edges" in the phrase "edges of said first and second bands of wavelengths" recited in claim 1 is interpreted to require that light be attenuated at *both* "edges" of both the first and second wavelength bands. We disagree with such a narrow interpretation.

The broadest reasonable interpretation of the phrase "edges of said first and second bands of wavelengths" dictates that the plural term "edges" refers to one edge of the first band of wavelengths and one edge of the second band of wavelengths. The Specification provides us little guidance for interpreting the claim without improperly confining the scope of the claims to the sole example presented therein (FF 1). *See Phillips*, 415 F.3d at 1323 ("[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments."). Yet, the language of claim 1 is itself instructive in that it requires that the trim filter attenuates light at "a first trim wavelength *between* said first and second characteristic wavelengths" (*see* claim 1)(emphasis added). Accordingly, the broader interpretation relied upon by the Examiner is reasonable.

Since Appellants admit the Examiner's finding that Suda describes a filter 7 attenuating light in the wavelengths that constitute the falling edge of

curve 16' (the green curve) and the rising edge of curve 17' (the red curve) is accurate (FF 2), Appellants have not shown that the Examiner reversibly erred in interpreting the phrase "selectively block light at the edges of said first and second bands of wavelengths" or in finding that Suda's filter 7 provides this function with respect to the red and green wavelengths of Figure 10.

Appellants also contend that Suda does not teach a "trim filter" as one of ordinary skill in the art would understand the term. In particular, Appellants argue that filter 7 of Suda is not a trim filter because (a) it does not display a trimming function throughout the red, green and blue wavelength bands depicted in Figure 10 (Br. 10; Reply Br. 2-3), (b) it does not demonstrate a trimming function with respect to the cyan, green or yellow wavelength bands depicted in Figure 4, despite the teaching in Suda that filter 7 is equally suited for use with these wavelength bands (Br. 9-10; Reply Br. 3-4), and (c) Suda has an express teaching of using filter 7 to solve the problem of signal imbalance between the various colors, which is not the same purpose as a "trim filter" (Br. 7-8; Reply Br. 3). Further, Appellants arguments in the Reply Brief suggest that the term "selected to block light" requires a teaching in the art of a step of selecting a particular filter based on how it attenuates light around a given wavelength (Reply Br. 5). We disagree.

Claim 1 is directed to a filter (claim 1). Appellants have agreed that the Examiner's finding that filter 7 attenuates light at wavelengths between the falling edge of curve 16' (the green curve) and the rising edge of curve 17' (the red curve) is accurate (FF 2-3). We agree with the Examiner that one of ordinary skill in the art would have understood any attenuation of

light as a trimming function to the extent required in claim 1. Accordingly, Suda teaches both the functional features and the structure of the trim filter recited in claim 1.

We find it of no moment that Suda's filter 7 does not perform a trimming function for each of the edges of the color wavelength bands depicted in Figure 10. As discussed above, under a broadest reasonable interpretation, the claim only requires trimming (light attenuation) between two adjoining edges of two wavelengths. We also find it of no moment that Suda's filter 7 does not perform an identical trimming function for the wavelength bands of alternative colors depicted in Figure 4. As discussed above, Suda's filter 7 teaches a trimming function to the extent required in claim 1.

We also find it of no moment that Suda's filter 7 is described for a purpose other than trimming. The Examiner has found that Suda's filter 7 provides a trimming function as required by claim 1, whether or not the prior art expressly identifies this function. Accordingly, the burden to show that the Suda's filter 7 does not provide a trimming function within the requirements of claim 1 falls to Appellants. By admitting that Suda's filter 7 attenuates light at the edges of two adjacent color wavelength bands (FF 2), Appellants attempt to show that filter 7 does not provide a trimming function are unpersuasive.

Regarding the phrase "selected to," we find that the purpose for which one chooses a filter does not structurally differentiate the claimed filter from Suda's filter 7. Accordingly, Appellants have not shown that the Examiner reversibly erred in finding that Figures 10 and 12 of Suda show that Suda describes a "trim filter" within the meaning of claim 1.

Appellants state that claims 2 and 4-6 stand or fall with claim 1 (Br. 11). Accordingly, we sustain the Examiner's first rejection.

III. SECOND REJECTION

For the second rejection, Appellants present arguments only with respect to claim 8 (Br. 12-13).

A. ISSUE ON APPEAL

An issue on appeal arising from the contentions of Appellants and the Examiner is: have Appellants shown that the Examiner reversibly erred in determining that the steps of bonding the filters taught by Suda, as recited in claim 8, would have been obvious to one of ordinary skill in the art?

B. FACTUAL FINDINGS

The following additional Findings of Fact are relevant to deciding the above identified issue on appeal:

4. The Examiner finds that Suda's color separation filters 531, 532, 533 constitute a primary filter and Suda's filter 7 constitutes a trim filter (Ans. 3).

5. Suda teaches that the color separation filters 531, 532, 533 are adhered to sensor 5 by dying respective photoelectric transducers or by coating the respective photoelectric transducers (Suda, col. 3, ll. 27-38).

6. Suda teaches that filter 7 is arranged in the optical path between the focusing optical system 4 and the sensor 5, and Figure 11 shows filter 7 physically displaced from sensor 5 (Suda, col. 9, ll. 40-43; Figure 11).

C. PRINCIPLES OF LAW

"On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of prima facie obviousness or by rebutting the

prima facie case with evidence of secondary indicia of nonobviousness." *In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) (emphasis omitted).

The Supreme Court recently clarified that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does," but that "the analysis need not seek out precise teachings [in the prior art] directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR Int'l v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

D. ANALYSIS

Appellants repeat the same arguments for allowability set forth above for claim 1, "but specifically directed to the method set forth in claim 8." The identical language at issue in claim 1 is at issue in claim 8 and is similarly directed towards the structure and operation of the "trim filter" (*see* claim 8). Accordingly, we find Appellants' contention with respect to the arguments presented for claim 1 unpersuasive with respect to claim 8 for the same reasons discussed above with respect to claim 1.

Appellants contend that Suda does not disclose or suggest bonding a trim filter layer to a substrate and bonding a primary filter layer to the trim filter layer (Br. 13).

The Examiner determined that it would have been obvious to one of ordinary skill in the art to bond the filters as recited in claim 8 because Suda teaches the additive functions of the filters and because an integral feature is more compact and does not require optical alignment (Ans. 5-6). Appellants do not contest this reasoning (*see generally* Br.). We find that this reasoning

is sufficient to support the Examiner's determination that it would have been obviousness to bond the trim filter and the primary filter together. *See KSR*, 550 U.S. at 419-420 ("One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.").

Furthermore, the Examiner relies on case law to support his reasoning that bonding the disclosed filters would involve no more than routine skill in the art (Ans. 5-6 and 15). To this, Appellants argue that a lack of any reference showing bonding and a lack of such bonding in the marketplace is evidence of more than routine skill (Reply Br. 5). However, Appellants provide no convincing evidence in support of their assertion that filters are not bonded in products available in the marketplace. Moreover, the prior art need not specifically teach bonding if it would have been obvious to one of ordinary skill in the art as demonstrated by the Examiner's reasoning. *See KSR*, 550 U.S. at 418.

Bonding in such a situation would appear to be within the capabilities of those of ordinary skill as found by the Examiner. The Examiner has shown that the prior art teaches the relevant filters (FF 4). Suda clearly teaches these filters as displaced from one another (FF 5-6), but the function of the filters would remain the same whether the filters are displaced or bonded together. Accordingly, we find that the weight of the evidence supports the Examiner's finding that bonding the filters together would have been within the capabilities of those of ordinary skill in the art.

Appellants state that claims 3 and 7 stand or fall with claim 1 (Br. 12). Appellants also state that claims 9-11 stand or fall with claim 8 (Br. 13). Accordingly, we sustain the Examiner's second rejection.

IV. CONCLUSION

For the reasons discussed above, we sustain the following rejections:

1. Claims 1, 2, and 4-6 rejected under 35 U.S.C. § 102(b) as anticipated by Suda; and

2. Claims 3 and 7-11 rejected under 35 U.S.C. § 103(a) as obvious over Suda.

V. DECISION

We affirm the Examiner's decision.

VI. TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(v) (2008).

AFFIRMED

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